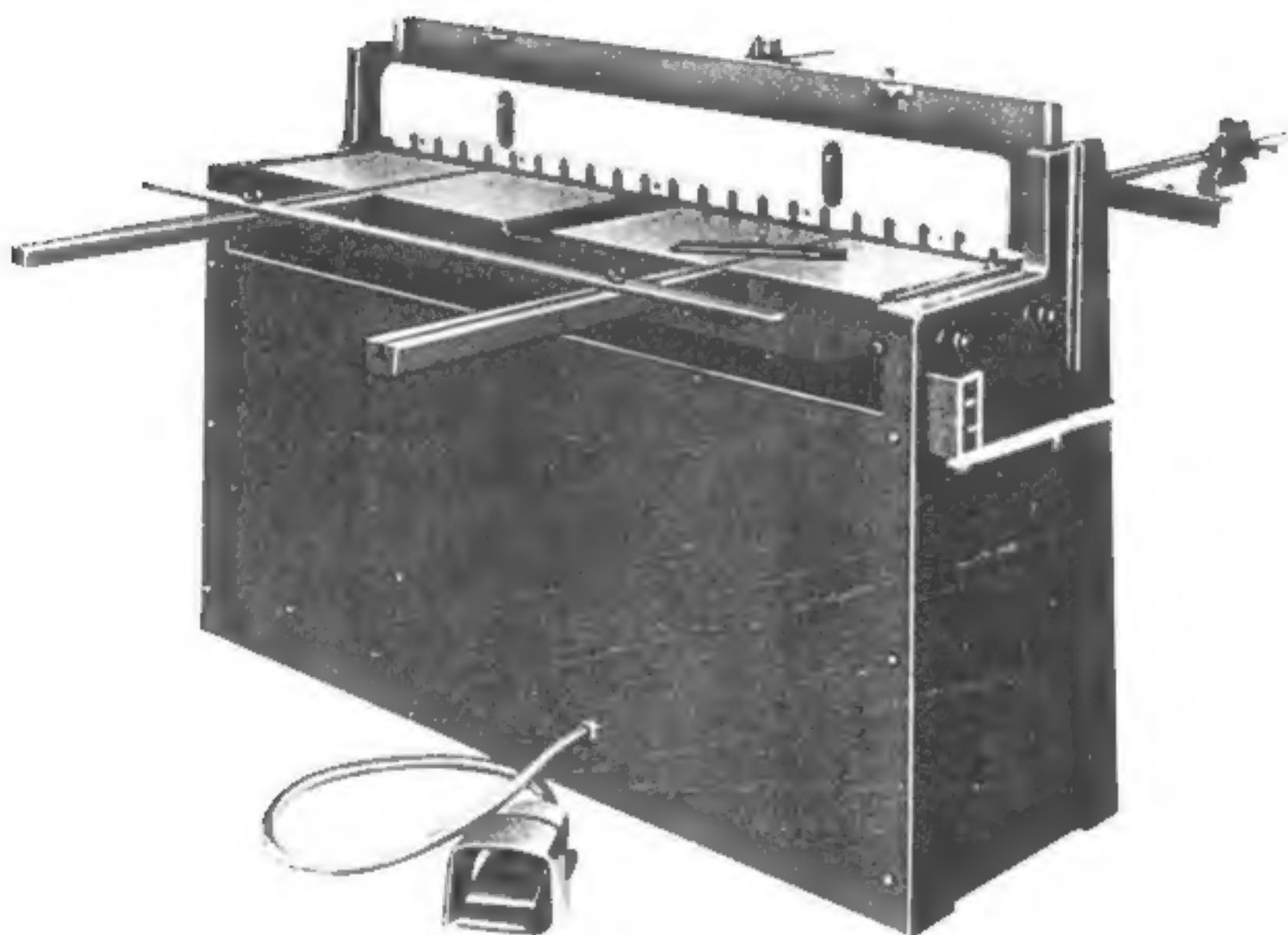


# **HYDRAULIC POWER SHEAR OPERATORS MANUAL & PARTS LIST**



**MODEL:FS-P5216H 52"×16GA  
FS-P5214H 52"×14GA  
FS-P5212H 52"×12GA**

## FOREWORD

This Manual has been prepared for the owner and operators of the Model 36 and 52 shear.

Its purpose, aside from operation instruction, is to promote safety through the use of accepted operating procedures.

Read all instructions thoroughly before operating the shear.

Also contained in this manual is the parts list for your shear. It is recommended that only factory authorized parts be used for replacement parts.

## WARRANTY

Complete Model 36 or 52 is warranted for one full year from the date of purchase.

## SAFETY INSTRUCTIONS

1. Know the safety and operating instructions contained in this brochure. Become familiar with and understand the hazards and limitations of this shear. Always practice safety.
2. Wear approved eye safety protection, such as glasses, goggles, etc., when operating the shear to protect your eyes.
3. Protective type footwear should be worn, and jewelry, such as rings, watches, etc., should be removed when operating the shear.
4. Do not remove the guard. It is a protection device. Keep holdown clearance to the minimum gap required to feed material.
5. Always keep hands clear of blade.
6. Do not misuse the shear by using it for other than its intended use.
7. Keep the work area clear and clean to avoid tripping or slipping.

## RECEIVING THE SHEAR

Remove the shear and back gauge assembly from their respective cartons and inspect the unit for damage.

Any damage should be reported to your distributor immediately.

## INSTALLING THE SHEAR

Locate the shear in a well lighted area on a solid level floor.

Use lag screws or bolts with expandable shields or similar holding devices thru mounting feet, located on the bottom of the side panels.

Place an accurate machinist level on the table top, and check the level of the machine in both directions. Use metal shims between floor and the shear mounting surface to adjust the level. After the machine is level, tighten the mounting bolts.

Re-check the unit for levelness periodically.

## OPERATION INSTRUCTIONS

The capacity of the Model 36 or 52 shear is 16 gauge mild steel.

The chart (Figure 1) should be used as an approximate material conversion comparison to show equivalent capacities of material other than mild steel. Do not exceed the capacity of this shear.

	16 GA.	18 GA.	20 GA.
MILD STEEL GAUGE	.060	.048	.036
STAINLESS STEEL			.031
SAE 1050 COLD ROLLED	.048	.036	.030
ALUMINUM	.100	.090	.083
BRASS, YELLOW			
• SOFT	.072	.064	.051
• ½ HARD	.064	.051	.036
• HARD	.064	.051	.036
BRONZE, PHOSPHOR			
• ANNEALED	.054	.051	.040
COPPER			
• SOFT	.072	.064	.051
• HARD	.064	.051	.040
PLASTIC ABS COMPOUNDS	.200	.150	.120

Never attempt to shear any material which would be less than a 1/2" cut across the full length of the table under full capacity.

## HYDRAULIC POWER SHEAR

### GENERAL INFORMATION

The hydraulic power shear is equipped with a fully integrated hydraulic unit with a 3HP 3-ph motor. Electrical service for 220V, 380V, or 440V is required. While other voltage is available upon request. The equipment includes hydraulic pump and tank, starter with selector switch for single stroke, double acting cylinders, safety pressure relief valve, powered hydraulic valve, foot switch and stroke control. Sheet metal covers are furnished to protect the hydraulic system. The foot switch is guarded.

For extra safety, the knife bar is designed to return to the top of stroke at any point in the stroke if the operator leaves his foot from the foot switch. The knife bar on the FS-P5216H will not return to the top of the stroke until the foot switch is released. The knife bar on the FS-P5214H & FS-P5212H will automatically return to the top of the stroke when the adjustable lower limit is reached. The stroke on the FS-P5216H is adjustable to fixed locations determined by positioning pins with the stroke control mechanism. The stroke on the FS-P5214H & FS-P5212H can be adjusted to infinite settings.

With all these devices, the operator can wholly control the cutting in smooth and quiet action to achieve clean and burr-free shearing.

### SPECIFICATIONS

		FS-P5216H	FS-P5214H	FS-P5212H
Cutting length .....	Inches .....	52	52	52
Capacity-Mild steel .....	Gauge .....	16	14	12
Capacity-Stainless steel .....	Gauge .....	20	18	16
Stroke per minute				
Full length .....		60	50	30
½ length .....		100	80	50
¾ length .....		150	123	75
Back Gauge range.....	Inches .....	24	24	24
Motor .....	Horsepower.....	3	3	3
Oil tank capacity .....	Ga. .....	5	5	■
Overall length .....	Inches .....	66	66	66
Overall height .....	Inches .....	42	42	42
Width front to back with gauges .....	Inches .....	77	77	77
Width front to back without gauges... Inches .....		26	26	26
Shipping weight .....	Pounds .....	1400	1750	2020

### RECEIVING INSTRUCTIONS

Each hydraulic power shear was carefully inspected, crated in perfect condition before shipment.

For your protection, examine crates, containers and protective covering immediately upon receipt.

Any external evidence of loss or damage must be noted on the Freight Bill or Express Receipt, and signed by the Carrier's Agent. File your claim promptly to hold the rights for compensation.

If any concealed loss or damage are found after the crate and covers are removed. Contact the Carrier and make a WRITTEN REQUEST for inspection at once. The equipment must be held for the transportation company's inspector. Then file a claim with the Carrier since such a loss or damage is his responsibility.

## INSTALLATION INSTRUCTION

The shear must be installed on a solid and level floor to avoid vibration in operation. The machine can be fixed to the floor with anchor bolts or insert cement into the floor.

Remove front and rear covers and loosen the bottom head hex socket cap screws with a 3/16" hex key. Then remove the following parts from the table:

- 2 table extensions
- 2 back gauge racks
- 1 left hand back gauge support & housing assy.
- 1 right hand back gauge support & housing assy.
- 1 back gauge stop

Remove the shear from the shipping plate, and place directly over the mounting bolts. With a precision level on the table surface to level the machine to within 0.0005" per foot form front to back and from left to right. Tighten the mounting bolts and check again if every step is all right. Install the table extensions, back gauge racks, back gauge supports, back gauge stop and front gauge step by step.

Clean all protective coating off the machine with mineral spirits. Then, recoat the machine with light lubricant.

Do check the blade clearance before connecting power to the shear in following step:

1. Set the stroke adjustment for full stroke.
2. Let the knife bar slowly drop and the cutting edges begin to intersect. Check with a feeler gauge for 0.003" clearance between blades on the right side.
3. Check the blade clearance from right to left as the knife bar moves downward. The clearance should be 0.003" on each side and 0.002" in the center. The clearance must be checked at the right point of intersection of the blades to get accurate indications.
4. If clearances are not correct, loosen the table bolts and move the table in or out. Use the square head set screws to push the table in to reduce clearance, the hex socket cap screw to pull the table out to increase clearance. Use the control screws alternately so as not to force one screw against the other and to maintain complete control over the table at all times. After the table bolts have been tightened and the control screws snugged up, recheck to assure clearance is not changed.
5. The clearance at the center of the blade can be changed with adjusting the nut on the tension rod stud.
6. Whenever the blades are changed or reversed, blade clearance must be checked and adjusted accordingly.

## IN USE OF BLADE

The hydraulic power shear has solid steel alloy shear blades with four casting edges on the bottom blade and two edges on the top. The multiple shearing edge prolong blade life considerably. Lubricate the blades with a light oil when shearing stainless steel or galvanized material. Brush oil on the lower blade only. The upper blade will pick up oil during the shearing cycle.

Keep the blades sharp. Reverse or change blades as soon as one edge is dull or a burr is noted on the blade. After all four edges have been used. It will be necessary to have the blade ground. The variation of the ground blades should be no greater than 0.001" within any 12" length and 0.002" for all length.

When installing reground blades, put shim stock under the lower edge to raise the blade up flush with the table.

A spare set of blades in stock to keep production on during regrinding is recommended.

## CAUTION IN OPERATION

Power of the shear must be released when working in the area of the blades. The blades are sharp and can cut hands if allowed to slip. Take much care in operation.

## ADJUSTMENT OF KNIFE BAR WAYS

The ram ways are adjustable to offset the wear after years of use. Normally, the adjustment is required every five years. Unless the shear is not operated properly, which causes a premature ways wear and twisting action.

The clearance of the blades should be kept between 0.0015" to 0.002" at all times to prolong the life of the blades and quality work.

Please follow the adjustment procedure stated below:

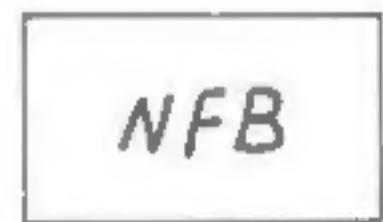
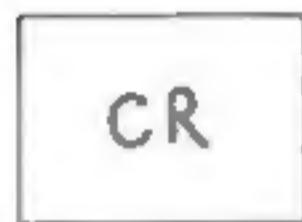
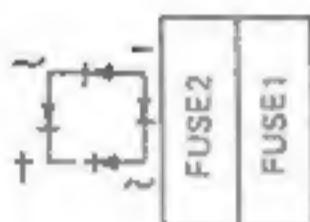
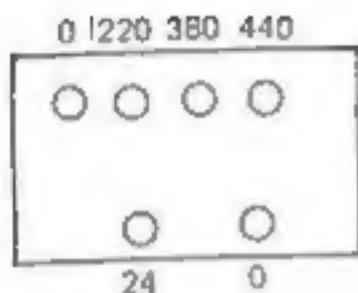
1. Disconnect electrical power from the machine.
2. Loosen the lock nut on the three square head set screws located on the rear side of the right hand housing (FS-P5216H) or front gib area of right hand end housing (FS-P5214H ■ FS-P5212H).
3. Run center set screw in tight to take up excess clearance.
4. Run in the top and bottom screws until they strike the wear plate, then back off 1/16 of a turn and tighten lock nuts.
5. Back off on the center set screw until it comes in line with the top and bottom screws. Tighten lock nut.
6. Check with a feeler gauge between the wear plate and the knife bar along the lower rear surface and the top rear surface that the proper clearance has been established.
7. Repeat steps 2 through 6 on the left hand end of the shear.
8. Check blade clearance and adjust if necessary.

## ELECTRICAL DEVICES

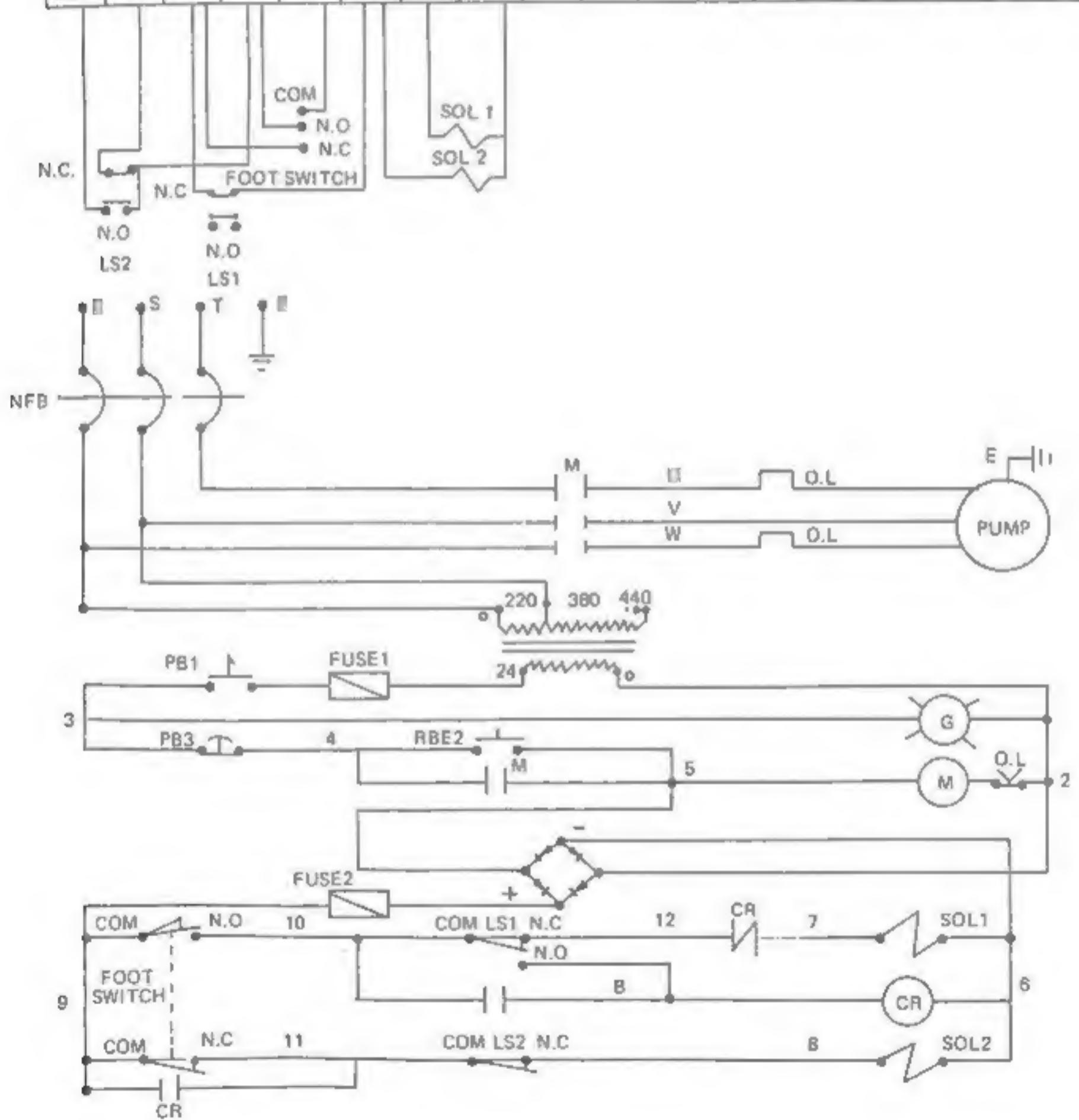
Electrical connections must be arranged by a qualified electrician in full accordance with the latest edition of the National Electrical Code. Your hydraulic shear is connected for the AC input voltage specified by the customer. The connections at transformer and the pump motor should agree with the service voltage available. After connecting, jog the motor by means of the start, stop push buttons to ascertain rotation. The motor should rotate in accordance with rotation arrow.

The hydraulic shear is controlled with following devices:

1. Start pushbutton: starts hydraulic pump motor.
2. Stop pushbutton: stops hydraulic pump motor.



13 12 11 10 9 8 7 6      W V U E T S R



3. On model FS-P5214H & FS-P5212H, a three position rotary selector switch. In single position, it provides a single stroke each time the foot pedal is depressed. In the repeat position, the shear will continuously cut as long as the foot pedal is depressed.
4. Foot switch: energizes the hydraulic valve solenoid, single or repeatedly as selected by the rotary selector switch.
5. Pump motor overload: may be reset by pressing the motor starter reset bar. Don't hold in the reset bar if overloads continuously trip.

### TROUBLE SHOOTING CHART

TROUBLE	CAUSE	REMEDY
BURR OR SHEARED EDGE	1. DULL BLADES 2. EXCESSIVE BLADE CLEARANCE 3. EXCESSIVE CLEARANCE IN KNIFE-BAR WAYS 4. POOR GRADE OF MATERIAL	1. TURN OR SHARPEN BLADES 2. ADJUST BLADES 3. ADJUST KINFE-BAR WAY 4. USE HIGHER GRADE STEEL
CAMBER, TWIST AND BOW	1. BOTTOM BLADE NOT LEVEL WITH TABLE 2. DULL BLADES	1. ADJUST BLADES-SHIM AFTER GRINDING 2. TURN ON SHARPEN BLADES
KICK BACK OF STOCK	1. BOTTOM BLADE NOT LEVEL WITH TABLE 2. NOT ENOUGH HOLD DOWN PRESSURE 3. DULL BLADE	1. ADJUST BLADES-SHIM 2. CHECK SPRINGS AND HOLDDOWN 3. TURN OR CHANGE BLADE
PUMP MOTOR WILL NOT RUN	1. NO ELECTRICAL POWER TO PUMP MOTOR DISCONNECT OPEN OR FUSES OPEN 2. MOTOR BURNED OUT 3. MOTOR STARTER DOES NOT CLOSE	1. CLOSE 3 PHASE DISCONNECT, CHECK POWER FUSES  2. REPLACE MOTOR 3. CHECK FUSE (F1) START SWITCH, STOP SWITCH, MOTOR STARTER COIL AND OVERLOADS
PUMP MOTOR RUNS SLOW	1. ONE FUSE OPEN 2. MOTOR IS SINGLE PHASING	1. REPLACE OPEN FUSE 2. REPLACE WITH A 3 PHASE MOTOR
PUMP MOTOR RUNS, SHEAR DOES NOT OPERATE	1. ELECTRICAL CIRCUIT OPEN  2. HYDRAULIC CIRCUIT	1. CHECK FOOT-SWITCH CONTROL RELAY CONTACTS, DOWN-SOLENOID COIL.  2. CHECK FOR STUCK VALVE, PUMP, PRESSURE LOW, CYLINDERS BY PASSING OIL.
SHEAR OPERATES DOWN BUT WILL NOT RETURN TO UP WHEN FOOT IS REMOVED FROM FOOT SWITCH	1. DEFECTIVE LIMIT SWITCH	1. REPLACE LIMIT SWITCH
SHEAR OPERATES DOWN BUT RETURNS TO THE UP POSITION SLOWLY.	1. NO HYDRAULIC PRESSURE TO LOWER CYLINDER 2. DEFECTIVE LIMIT SWITCH 3. DEFECTIVE UP SOLENOID	1. CHECK FOR STUCK VALVE 2. REPLACE LIMIT SWITCH  3. REPLACE SOLENOID COIL COMPLETE VALVE.

## BACK GAUGE ADJUSTMENT

To adjust back gauge, loosen adjustment knobs, slide angle against blade. Adjust rods "in or out" for scales to read "0" on pointers.

Lock back bracket, using vernier wheel for final adjustment. Then tighten socket screws to lock rods in place.

## TABLE ADJUSTMENT

To adjust blade clearance, loosen front set screws and locking table screw, loosen large bolts on each side.

Use a .002" shim gauge and adjust table "in or out" by use of locking table screws. Tighten all screws to lock it back in place. (See Figure 2).

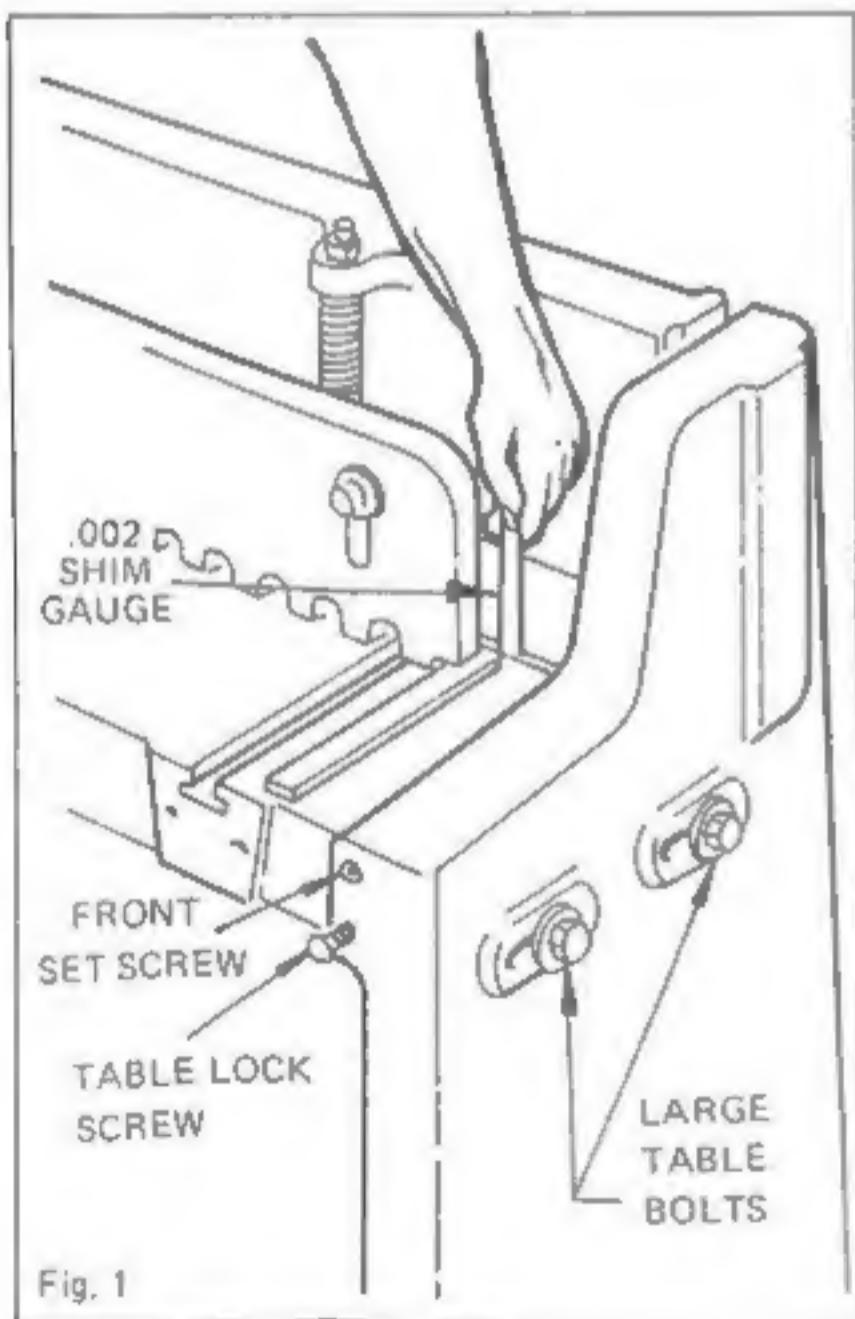


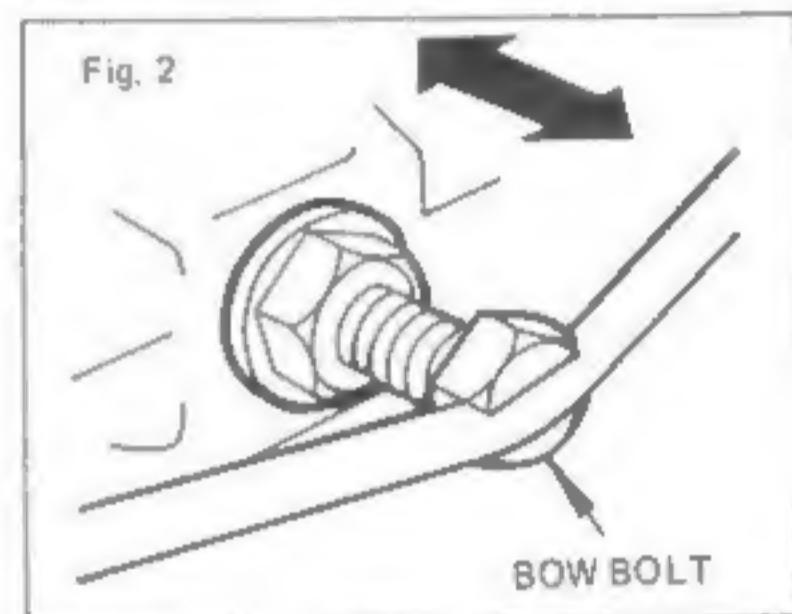
Fig. 1

## CUTTERHEAD ADJUSTMENT

If cutterhead blade is bowed, adjust bow bolt shown in figure 3. Check for looseness of mounting bolts. Retighten all bolts.

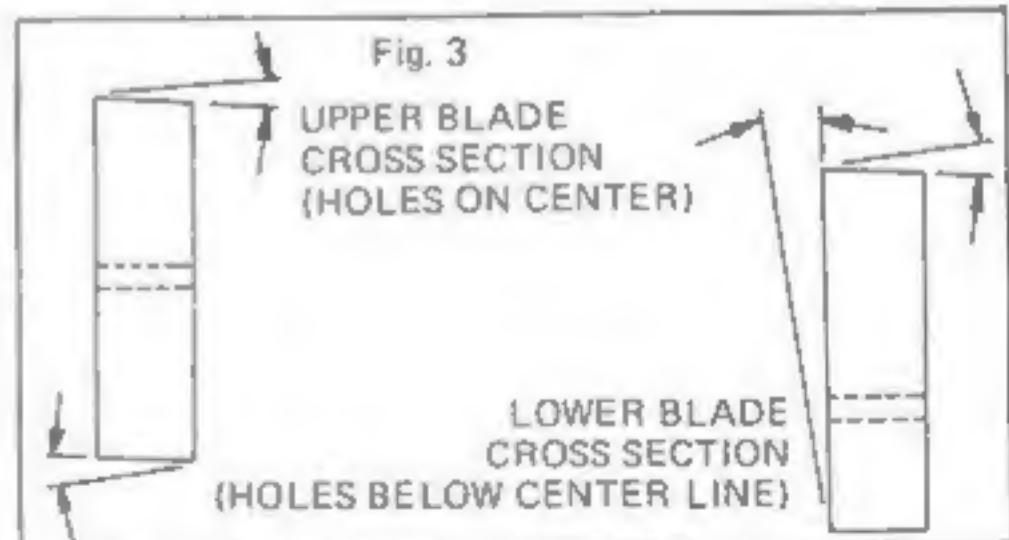
Play in blade may be caused by loose lock screws. Check these screws and be certain they are snug against shims while being careful not to dimple them.

If it becomes necessary to adjust the end of the blade up or down, drop pin on threadle and loosen jam nut, adjust yoke up or down, and reassemble.

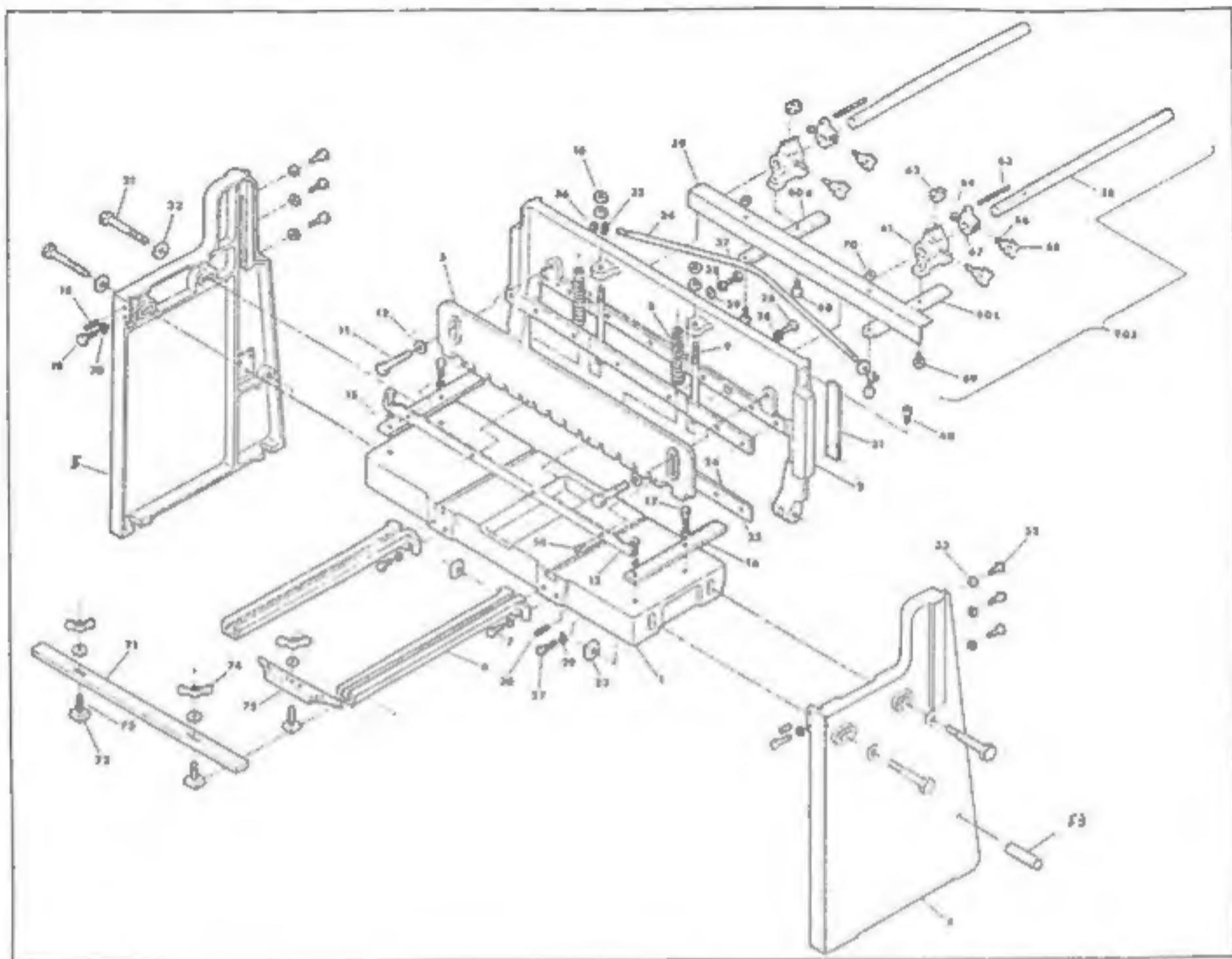


## SHARPENING BLADES

Your shear features "Tri-Action" ground blades. The upper blade has two cutting edges which are ground with a  $2^\circ$  edge relief. The upper blade can be turned over to expose the new cutting edge. It can be sharpened on a surface grinder by grinding both wide sides of the blade. The lower blade has one cutting edge with a  $2^\circ$  edge relief and a  $1^\circ$  face relief. It can be sharpened on a surface grinder by grinding the wide side of the blade having the  $1^\circ$  relief. (See Figure 4).



# POWER SHEARS/PARTS LIST



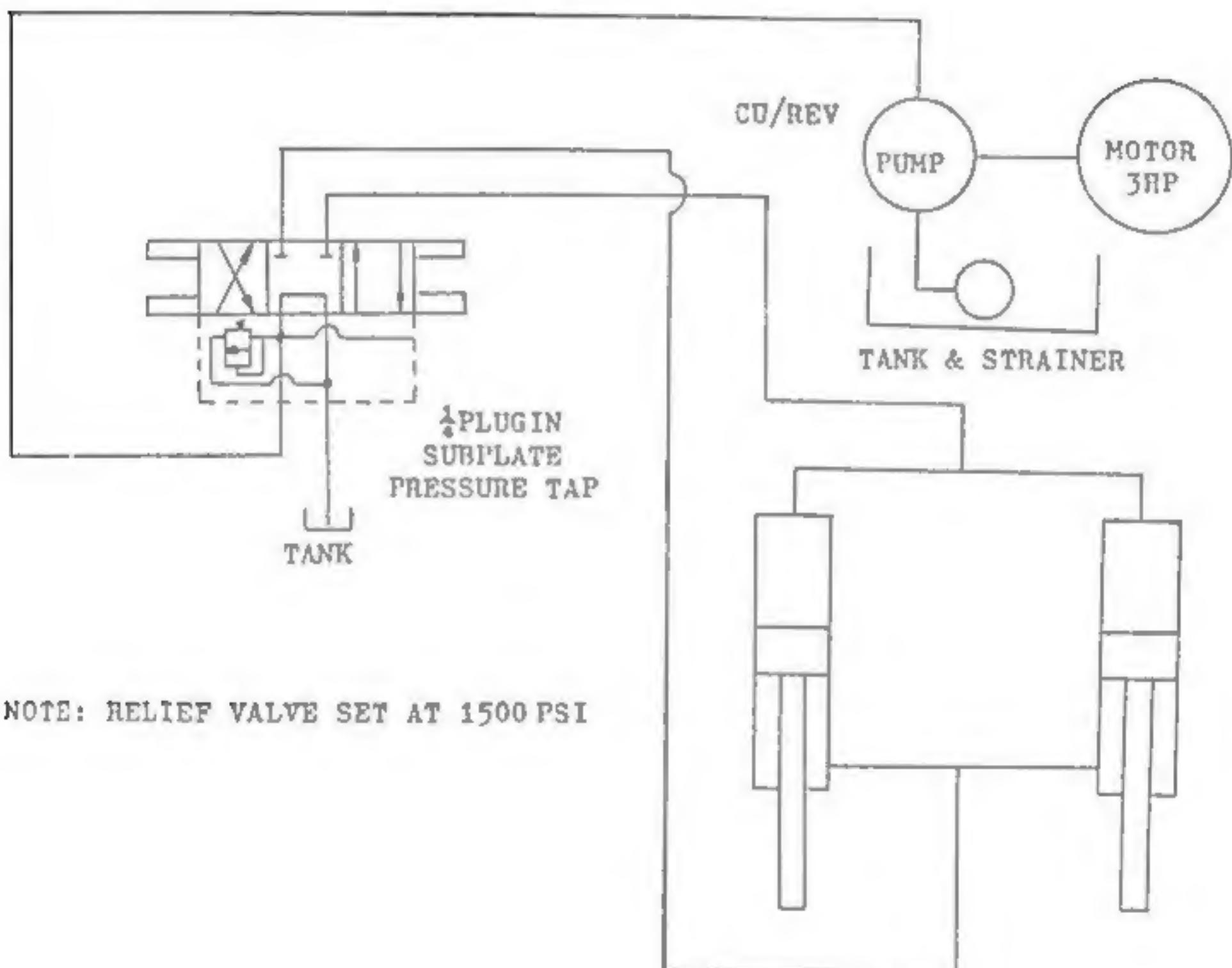
## PARTS LIST

ITEM NO.	DESCRIPTION	QTY
1	TABLE	1
2	CUTTER BAR	1
3	HOLDDOWN	1
4	R. H. SIDE PANEL	1
5	L. H. SIDE PANEL	1
6	FRONT ARM EXT	2
7	SCREW, FRONT ARM EXT	4
8	SPRING, HOLDDOWN	2
9	STUD, HOLDDOWN SPRING	2
10	NUT, HOLDDOWN STUD	4
11	SCREW, HOLDDOWN	2
12	WASHER, HOLDDOWN SCREW	2
13	FINGER GUARD	1
14	SCREW, FINGER GUARD	4
15	SCALE, L. H. TABLE	1
16	SCALE, R. H. TABLE	1
17	SCREW, TABLE SCALE	4
17A	WASHER, TABLE SCALE	4
18	SET SCREW, TABLE ADJ	2
19	SCREW, TABLE LOCK	2
20	WASHER, TABLE LOCK SCREW	2
21	BOLT, TABLE	4
22	WASHER, TABLE BOLT	4
23	NUT, TABLE	4
24	KNIFE, UPPER	1
25	KNIFE, LOWER	1
26	SCREW, UPPER KNIFE	7
27	SCREW, LOWER KNIFE	6
28	WASHER, UPPER KNIFE	7
29	WASHER, LOWER KNIFE	12
30	SET SCREW, LOWER KNIFE ADJ	6
31	SHIM, C' BAR	2
32	SCREW, C' BAR SHIM	6
33	NUT, C' BAR SHIM SCREW LOCK	6
34	STRAIGHTENER ROD, C' BAR	1
35	WASHER, STRAIGHTENER ROD	2
36	NUT, STRAIGHTENER ROD	2
37	ADJ, SCREW, STRAIGHTENER ROD	1
38	NUT, ADJ, SCREW	1
39	WASHER, ADJ, SCREW	1

## PARTS LIST

ITEM NO	DESCRIPTION	QTY
40	SET SCREW, BACK GAUGE ROD	2
50	PIN	2
51	PIN	2
53	PIN, PEDAL BAR	2
58	ROD, BACK GAUGE	2
59	STOP, BACK GAUGE	1
60R	EXT, BAR, BACK GAUGE	1
60L	EXT, BAR, BACK GAUGE	1
61	ADJ, BLOCK, BACK GAUGE	2
62	ADJ, DIAL, BACK GAUGE	2
63	ADJ, SCREW, BACK GAUGE	2
64	NUT, ADJ, SCREW	2
65	KNOB, LOCK	4
66	STUD, KNOB	4
67	ADJ, BRKT	2
68	SCREW, EXT, BAR	2
69	SWIVEL BOLT	3
70	NUT, SWIVEL BOLT	2
71	STOP, FRONT MATERIAL	1
72	"T" NUT	3
73	STUD "T" NUT	3
74	WING NUT "T" NUT	3
75	BEVEL GAUGE	1
76	STROKE CONTROL KNOB	1
77	LIMIT SWITCH	1
78	PIN	2
79	LIMIT SWITCH	1
80	R. H. HYDRAULIC CYLINDER	1
81	L. H. HYDRAULIC CYLINDER	1
82	HOSE, R. H.	2
83	HOSE, L. H.	2
84	PIN	4
85	TREADLE STUDS	1
86	3HP MOTOR	1
87	PUMP	1
88	DIRECTIONAL	1
89	RELIEF VALVE	1
90	SUCTION FILTER	1
91	OIL METER	1
903	BACK GAUGE ASSEMBLY	1

HYDRAULIC DIAGRAM



NOTE: RELIEF VALVE SET AT 1500 PSI